

In the Claims

Amend the claims as follows:

1: (currently amended) A method of making an embedded attenuated phase shift mask (EAPSM) comprising:

providing a phase shift mask substrate having a layer of phase shifting material
and a layer of an opaque material;

depositing a first resist layer on the substrate;

exposing and developing the first resist layer and etching the substrate to create
first level phase shifting image segments on the substrate corresponding
to areas of critical structures to be exposed with the EAPSM;

depositing a second resist layer on the substrate having first level phase shifting
image segments;

providing a single frame exposure mask corresponding to non-critical areas
outside the critical structure areas;

using the single frame exposure mask, exposing the second resist layer;

developing the second resist layer; and

etching the substrate critical structure areas to remove the opaque material
therefrom the critical structure areas;

marking the single frame exposure mask with an identification corresponding to
the EAPSM or corresponding to chip or field size of the EAPSM;

storing the single frame exposure mask in a mask library for future use;

obtaining the single frame exposure mask from the mask library; and

using the single frame exposure mask to repair or remanufacture the EAPSM.

2. (original) The method of claim 1 wherein exposing the first resist layer is by use of a direct write electron beam or laser energy source, and wherein exposing the second resist layer is by an energy source other than the energy source used to expose the first resist layer.

3. (original) The method of claim 1 wherein exposing the second resist layer is by simultaneous projection exposure.

4. (cancelled).

5. (currently amended) The method of ~~claim 4~~ claim 1, wherein the EAPSM is reworked, and further including using the single frame exposure mask to remanufacture the EAPSM.

6. (currently amended) The method of ~~claim 4~~ claim 1, wherein the EAPSM is damaged, and further including using the single frame exposure mask to repair the EAPSM.

7. (currently amended) The method of ~~claim 4~~ claim 1, wherein the EAPSM is redesigned, and further including using the single frame exposure mask to remanufacture the EAPSM.

8. (currently amended) The method of ~~claim 4~~ claim 1 further including identifying and storing the single frame exposure mask for future use with other EAPSMs in a same mask set as the EAPSM.

9. (previously presented) The method of claim 3 further including identifying and storing the single frame exposure mask for future use with other EAPSMs having the same chip or field size as the EAPSM.

10. (original) The method of claim 1 wherein the single frame exposure mask uses a 1:1 reduction ratio to expose the second resist layer.

11. (original) The method of claim 1 wherein the single frame exposure mask uses a reduction ratio other than 1:1 to expose the second resist layer.

12. (currently amended) A method of making an embedded attenuated phase shift mask (EAPSM) comprising:

providing a phase shift mask substrate having a layer of phase shifting material
and a layer of an opaque material;

depositing a first resist layer on the substrate;

exposing the first resist layer with a direct write electron beam or laser energy
source;

developing the first resist layer and etching the substrate to create first level
phase shifting image segments on the substrate corresponding to areas of
critical structures to be exposed with the EAPSM;

depositing a second resist layer on the substrate having first level phase shifting segments;

providing a single frame exposure mask corresponding to non-critical areas outside the critical structure areas;

using the single frame exposure mask, exposing the second resist layer by simultaneous projection exposure;

developing the second resist layer; ~~and~~

etching the ~~substrate~~ critical structure areas to remove the opaque material therefrom ~~the critical structure areas;~~

marking the single frame exposure mask with an identification corresponding to the EAPSM or corresponding to chip or field size of the EAPSM;

storing the single frame exposure mask in a mask library for future use with other EAPSMs in the same mask set as the EAPSM, or with other EAPSMs having the same chip or field size as the EAPSM;

obtaining the single frame exposure mask from the mask library; and

using the single frame exposure mask to repair or remanufacture the EAPSM.

13. (cancelled)

14. (currently amended) The method of ~~claim 13~~ claim 12, wherein the EAPSM is reworked, is damaged or is redesigned, and further including using the single frame exposure mask to repair or remanufacture the EAPSM.

15. (cancelled)

16. (original) The method of claim 12 wherein the single frame exposure mask uses a 1:1 reduction ratio to expose the second resist layer.

17. (original) The method of claim 12 wherein the single frame exposure mask uses a reduction ratio other than 1:1 to expose the second resist layer.

18. (currently amended) A method of making an embedded attenuated phase shift mask (EAPSM) comprising:

providing a phase shift mask substrate having a layer of phase shifting material

and a layer of an opaque material;

depositing a first resist layer on the substrate;

exposing the first resist layer with a direct write electron beam or laser energy source;

developing the first resist layer and etching the substrate to create first level

phase shifting image segments on the substrate corresponding to areas of critical structures to be exposed with the EAPSM;

depositing a second resist layer on the substrate having first level phase shifting image segments;

providing a single frame exposure mask corresponding to non-critical areas outside the critical structure areas;

using the single frame exposure mask, exposing the second resist layer by an energy source other than the energy source used to expose the first resist layer;

developing the second resist layer;

etching the ~~substrate~~ critical structure areas to remove the opaque material
therefrom ~~the critical structure areas~~; and

identifying and storing the single frame exposure mask for future use with the
EAPSM in the same mask set as the EAPSM, or with other EAPSMs having
the same chip or field size as the EAPSM.

19. (original) The method of claim 18, wherein the EAPSM is reworked, is damaged or is redesigned, and further including using the single frame exposure mask to repair or remanufacture the EAPSM.

20. (original) The method of claim 18 wherein exposing the second resist layer is by simultaneous projection exposure.